

What we claim is:

1. A reflective liquid crystal display comprising:
a cholesteric liquid crystal polarizing device;
a liquid crystal cell; and
an internal quarter-wave retarder;
said cholesteric liquid crystal polarizing device, said liquid crystal cell, and said quarter wave retarder being superposed with one another.
2. The reflective liquid crystal display of claim 1 wherein said reflective liquid crystal display includes a normally white mode device.
3. The reflective liquid crystal display of claim 1 wherein said reflective liquid crystal display includes a normally black mode device.
4. The reflective liquid crystal display of claim 1 wherein said liquid crystal cell is disposed adjacent to a thin film transistor array having a plurality of pixel regions.
5. The reflective liquid crystal display of claim 1 wherein said cholesteric liquid crystal polarizing device includes a plurality of pixel regions.
6. The reflective liquid crystal display of claim 5 wherein said pixel regions are arranged in a repeating array of red pixels, green pixels and blue pixels, said red pixels reflecting circularly polarized red light, said green pixels reflecting circularly polarized green light and said blue pixels reflecting circularly polarized blue light.
7. The reflective liquid crystal display of claim 1 wherein:
said liquid crystal cell is disposed adjacent to a thin film transistor array having a plurality of pixel regions;
said cholesteric liquid crystal polarizing device includes a plurality of pixel regions; and
said plurality of pixel regions of said thin film transistor array are in registration with said plurality of pixels of said cholesteric liquid crystal polarizing device.

8. The reflective liquid crystal display of claim 1 wherein said cholesteric liquid crystal polarizing device includes a multiple domain structure.
9. The reflective liquid crystal display of claim 8 wherein said multiple domain structure is produced by disposing a cholesteric liquid crystal polarizing layer on a clean substrate.
10. The reflective liquid crystal display of claim 8 wherein said multiple domain structure is produced by embossing an irregular relief structure on a surface of said cholesteric liquid crystal polarizing device.
11. The reflective liquid crystal display of claim 1, wherein said liquid crystal cell comprises a twisted nematic liquid crystal.
12. The reflective liquid crystal display of claim 9, wherein said twisted nematic liquid crystal is a 90° twisted nematic liquid crystal.
13. The reflective liquid crystal display of claim 1 further comprising a linear polarizer and an absorbing medium.
14. The reflective liquid crystal display of claim 1 comprising a monochromatic display.
15. A reflective liquid crystal display comprising:
 - a linear polarizer, said linear polarizer having a polarization direction;
 - a liquid crystal cell;
 - a quarter-wave retarder, said quarter-wave retarder having a fast axis;
 - a cholesteric liquid crystal polarizing device including a plurality of pixel regions; and
 - an absorbing medium.
16. The reflective liquid crystal display of claim 15 wherein said liquid crystal cell is disposed adjacent to a thin film transistor array having a plurality of pixel regions.

17. The reflective liquid crystal display of claim 16 wherein said plurality of pixel regions of said thin film transistor array are in registration with said plurality of pixels of said cholesteric liquid crystal polarizing device.

18. The reflective liquid crystal display of claim 15 wherein said liquid crystal cell includes a twisted nematic liquid crystal.

19. The reflective liquid crystal display of claim 18 wherein said twisted nematic liquid crystal is a 90° twisted nematic liquid crystal.

20. The reflective liquid crystal display of claim 15, said reflective liquid crystal display being a normally white mode device, wherein
said fast axis of said quarter-wave retarder is oriented at -45° to said polarization direction of said linear polarizer; and
said cholesteric liquid crystal polarizing device reflects substantially pure left-hand circularly polarized light.

21. The reflective liquid crystal display of claim 15, said reflective liquid crystal display being a normally black mode device, wherein
said fast axis of said quarter-wave retarder is oriented at $+45^\circ$ to said polarization direction of said linear polarizer; and
said cholesteric liquid crystal polarizing device reflects substantially pure left-hand circularly polarized light.

22. The reflective liquid crystal display of claim 15, said reflective liquid crystal display being a normally white mode device, wherein
said fast axis of said quarter-wave retarder is oriented at $+45^\circ$ to said polarization direction of said linear polarizer; and
said cholesteric liquid crystal polarizing device reflects substantially pure right-hand circularly polarized light.

23. The reflective liquid crystal display of claim 15, said reflective liquid crystal display being a normally black mode device, wherein
- said fast axis of said quarter-wave retarder is oriented at -45° to said polarization direction of said linear polarizer; and
 - said cholesteric liquid crystal polarizing device reflects substantially pure right-hand circularly polarized light.
24. A method for fabricating a reflective liquid crystal display, said method comprising:
- providing a liquid crystal cell disposed adjacent to a thin film transistor array having a plurality of pixel regions; and
 - superposing said liquid crystal cell with a cholesteric liquid crystal polarizing device.
25. The method of claim 24 further comprising :
- providing said cholesteric liquid crystal polarizing device with a plurality of pixel regions,
 - arranging said pixel regions in a repeating array of red pixels, green pixels and blue pixels, said red pixels reflecting circularly polarized red light, said green pixels reflecting circularly polarized green light and said blue pixels reflecting circularly polarized blue light.
26. The method of claim 25 further comprising:
- aligning said pixel regions of said cholesteric liquid crystal polarizing device with said pixel regions of said thin film transistor array to register them with one another.
27. The method of claim 24 further comprising:
- superposing said cholesteric liquid crystal polarizing device and said liquid crystal cell with a linear polarizer, a quarter-wave retarder and an absorbing medium.
28. The method of claim 27 further comprising:

orienting the fast axis of said quarter-wave retarder to produce a normally white mode reflective liquid crystal display.

29. The method of claim 27 further comprising:

orienting the fast axis of said quarter-wave retarder to produce a normally black mode reflective liquid crystal display.

30. The method of claim 24 wherein said liquid crystal cell comprises a 90° twisted nematic liquid crystal.

31. A cholesteric liquid crystal polarizing device comprising:

a substrate;

an alignment layer; and

a cholesteric liquid crystal polarizing layer including a plurality of pixel regions, wherein said pixel regions are arranged in a repeating array of red pixels, green pixels and blue pixels, said red pixels reflecting circularly polarized red light, said green pixels reflecting circularly polarized green light and said blue pixels reflecting circularly polarized blue light.